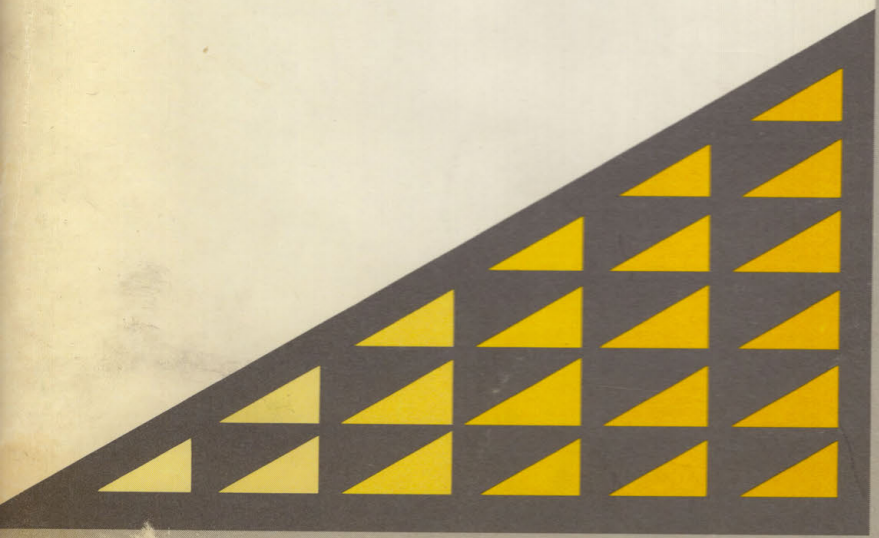
Bridge

Omni-Bridge Owner's Manual



SYSGEN

SYSGEN Omni-Bridge Owner's Manual

SYSGEN, Inc.
556 Gibraltar Drive
Milpitas, CA 95035

Phone: (408) 263-4411
Telex: 4990843

87-02677-01 Rev. B May 1989

Copyright Notice

Manual Copyright © 1988, 1989, SYSGEN, Inc.
Part Number 87-02677-01 Revision B
All Rights Reserved.

Printed in U.S.A.

SYSGEN Omni-Bridge is a trademark of SYSGEN, Inc. IBM is a registered trademark of International Business Machines Corporation. PC, XT, AT, and PS/2 are trademarks of International Business Machines Corporation.

SYSGEN, Inc. reserves the right to make changes or improvements to the equipment, software, and documentation described herein at any time and without notice.

Every possible effort was made to ensure accuracy in this manual. However, SYSGEN cannot accept responsibility for any manual errors or consequences resulting from such errors. Unless you receive written permission from SYSGEN, Inc., you may not reproduce or transmit any part of this document in any form by any electronic or mechanical means including photocopying and recording, or by any information storage and retrieval system.

Compliance with FCC Regulations

This equipment generates and uses radio frequency energy and if not installed and used properly; i.e., in strict accordance with this manual, may cause harmful interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J or Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to correct the interference.

Table of Contents

Preface vii

SYSGEN's Omni-Bridge vii
Features vii
Omni-Bridge Installations viii
Hardware Prerequisites ix
Using SYSGEN External Drives ix
External Connector Signal Compatibility ix
Software for the Omni-Bridge ix
How to Use This Manual x

Chapter 1; Configuring the Omni-Bridge 1-1

About the Configuration 1-1
Which Way Is On? 1-2
Setting the Drive-Type Switches 1-4
Setting the BIOS ROM Address Switches 1-6
Setting the I/O Address Switch 1-8
Setting the Drive Speed Switch 1-10
Setting the External Power Jumpers 1-12

Chapter 2; Hardware Installation 2-1

About This Chapter 2-1
Before You Begin 2-1
Hardware Installation Procedure 2-2
Phase 1: Opening Up the Computer 2-2
Phase 2: Installing the Omni-Bridge 2-4
Replacement Installation 2-4
Coexistent Installation 2-5
Phase 3: Closing Up the Computer 2-6

Chapter 3; Software Installation 3-1

About the Software Installation 3-1
Automatic Software Installation Instructions 3-2
Functions Performed By INSTALL 3-2
Manual Software Installation Instructions 3-3
First and Second Omni-Bridge Drives 3-4
Using OMNIVIEW.COM 3-5
Formatting Diskettes 3-5
Running OFORMAT 3-6

Chapter 4; Installing SYSGEN External Drives 4-1

About This Chapter 4-1
SYSGEN's Bridge-File 4-1
SYSGEN's Bridge-Tape 4-1
SYSGEN's PSF-360 4-1
Power for External Drives 4-2
Before You Begin 4-2
Hardware Installation for SYSGEN Drives 4-2
Software Installation for SYSGEN Drives 4-3
Software Installation for Bridge-File, PSF-360 4-4
Software Installation for Bridge-Tape 4-4
Daisy Chaining 4-5

Appendix A; Configuring 1.2 Mbyte Diskette Drives For Dual Speed Operation A-1

About Dual Speed Operation A-1
Configuring the Fujitsu M2553K and M2554K A-2
Configuring the Chinon FZ-506 ..... A-3
Configuring the Mitsubishi MF504C-3 ..... A-4
Configuring the TEAC FD-55GFR-340/440/540 ..... A-5

Appendix B; Omni-Bridge Interconnection Diagrams B-1

About the Omni-Bridge's Connectors B-1

About the Internal Connectors B-1
About the External Connector B-1

Appendix C; Installing Internal Diskette Drives C-1

Physical Mounting C-1
5.25-Inch Drives C-1
3.5-Inch Drives C-1
AT Mounting C-1
XT Mounting C-2
Cables and Connections C-3
Ribbon Cables C-4
Card-Edge Connectors C-4
Header (Pin-Type) Connectors C-5
Drive Select C-5
Drive Termination C-8
What Is Termination? C-8
Removable Terminators C-8
Switchable Terminators C-9
When To Terminate a 5.25-Inch Drive C-9
Drive Power C-10

Glossary G-1

Software License and Product Warranty W-1

Software License Agreement W-1
License W-1
Term W-2
Limited Warranty for Equipment W-2
Licensed Programs or Other Software W-3

Preface

SYSGEN's Omni-Bridge

SYSGEN's Omni-Bridge is a high-performance diskette drive controller which can be used in any IBM PC, XT, AT, or compatible computer. The Omni-Bridge can control up to four drives. Any combination of the following diskette drives can be connected:

- 360 Kbyte 5.25-inch Normal Density
- 1.2 Mbyte 5.25-inch High Density
- 720 Kbyte 3.5-inch Normal Density
- 1.44 Mbyte 3.5-inch High Density

Two drives that are mounted inside the computer's system unit can be connected to the Omni-Bridge's internal connector. An additional two external drives can be connected to the Omni-Bridge's external connector.

Features

The Omni-Bridge allows IBM PC, XT, AT, and compatible computers to use high-performance, high-capacity diskette drives. With these drives, owners of earlier computer systems can read, write, and format the same diskettes as used by IBM AT and PS/2 users.

The half-length Omni-Bridge can be installed in place of the regular diskette drive adapter in any IBM PC, XT, AT, or compatible computer, or can coexist with a previously installed floppy controller.

The Omni-Bridge offers the following features:

- Controls any combination of 3.5-inch or 5.25-inch diskette drives, up to a total of four
- Provides 100% hardware and software compatibility with IBM PC and XT diskette drive controllers
- Offers compatibility with SYSGEN Bridge-File, Bridge-Tape and PSF-360 products
- Features selectable I/O address
- Features selectable BIOS address

Omni-Bridge Installations

The Omni-Bridge can either replace your existing diskette drive controller, or it can be installed so that it coexists with the diskette drive controller already in your computer.

In the replacement installation, you can use the Omni-Bridge to control your existing floppy drives and to add up to two external drives. With the Omni-Bridge installed you can also replace your existing floppy drives with high capacity 5.25-inch 1.2-megabyte or 3.5-inch 1.44-megabyte diskette drives.

In the coexistent installation, you can use the Omni-Bridge to add as many as four more diskette drives to your computer; two of them internal and two of them external.

If you are installing the Omni-Bridge in an IBM ÁT or compatible computer, you will probably want to install the Omni-Bridge so that it coexists with the existing diskette drive controller. This is because the AT's diskette drive controller and hard disk controller are built into the same circuit board. Thus, the existing diskette drive controller can't be removed without also removing the hard disk controller.

The Omni-Bridge can be used to replace the AT's diskette drive controller, but only if you are also installing an AT compatible hard disk controller without a built-in diskette drive controller.

Hardware Prerequisites

The Omni-Bridge works in any IBM PC, XT, AT, or compatible computer system.

Using SYSGEN External Drives

Any SYSGEN Bridge-File, Bridge-Tape, or PSF-360 product can be plugged into the external connector on the Omni-Bridge, just as if the Omni-Bridge were a standard IBM XT diskette drive controller.

However, a Bridge-Tape unit connected to an Omni-Bridge controller operates **twice as fast** as one connected to a standard PC or XT diskette drive controller.

In addition, a Bridge-File unit connected to an Omni-Bridge controller can be used at its **full 1.44 Mbyte capacity**; a Bridge-File connected to a standard PC or XT controller is restricted to a maximum capacity of 720 Kbytes.

External Connector Signal Compatibility

The 37-pin external D-shell connector on the back of the Omni-Bridge board has the same functionality as the external D-shell connector found on the back of the IBM PC/XT diskette drive controller. Any external drive that is designed to be plugged into the back of the PC/XT diskette drive controller can also be plugged into the back of the Omni-Bridge board.

Software for the Omni-Bridge

The Omni-Bridge includes software to help you set up your computer to work with this product. The software consists of the following:

SETUP.EXE

This program helps you configure the Omni-Bridge board for your particular computer. Be sure to run this program before you

remove your existing floppy controller or install the Omni-Bridge board.

OMNIBRG.SYS
: This is a device driver for external diskette drives plugged into the external connector on the Omni-Bridge, or for any diskette drives connected to an Omni-Bridge that coexists with the original floppy controller in your computer.

INSTALL.EXE
: This program helps you install OMNIBRG.SYS properly. It asks you about the way your computer is set up, and then modifies your CONFIG.SYS file to include OMNIBRG.SYS. If you don't already have a CONFIG.SYS file, the program creates one.

OMNIVIEW.COM
: This program identifies the drive letters that are assigned to diskette drives connected to the Omni-Bridge, excluding the A: and B: diskette drives.

How to Use This Manual

This manual guides you through the installation of the Omni-Bridge controller board in your IBM PC, XT, AT, or compatible computer. Each of the following steps is discussed in more detail in later chapters:

1. Run the Omni-Bridge's SETUP program on the computer you are installing the Omni-Bridge on. This program tells you how to configure the Omni-Bridge for your computer. If you are unable to run the SETUP program for some reason, refer to Chapter 1, *Configuring the Omni-Bridge*, for the appropriate configuration switch settings.
2. Configure the Omni-Bridge for your particular installation by setting the switches and jumpers on the Omni-Bridge board as directed by the SETUP program, or by Chapter 1, *Configuring the Omni-Bridge*.
3. Install the Omni-Bridge board in your computer. See Chapter 2, *Hardware Installation*.
4. If you are installing external diskette drives such as the SYSGEN Bridge-File with the Omni-Bridge, perform the Omni-Bridge's software installation. See Chapter 3, *Sotftware installation*. Do

not perform the Bridge-File's software installation; perform the Omni-Bridge's software installation instead.

5. If you are installing external SYSGEN drives such as the Bridge-File or Bridge-Tape with the Omni-Bridge, Install the external drive. See Chapter 4, *Installing Sysgen External Drives.*

Chapter 1

Configuring the Omni-Bridge

About the Configuration

Configuring the Omni-Bridge consists simply of setting several switches and jumpers on the Omni-Bridge board. Setting these switches and jumpers matches the Omni-Bridge to your computer.

SYSGEN's Omni-Bridge controller includes a self-guided SETUP program that simplifies configuring the Omni-Bridge. This program looks at your computer from the inside, and tells you how to set the switches on the Omni-Bridge board. SETUP should be run before you start the hardware installation. To run SETUP, put the diskette provided with the Omni-Bridge in Drive A: of your computer. At the **A:** prompt, type:

SETUP <Enter>

Follow along with the instructions on the screen, while referring to this manual for additional information and greater detail. If you run into any difficulties that can't be resolved by either the on-screen explanation or the manual, contact SYSGEN Technical Support for help.

If for some reason you can't run SETUP (for instance, if you are setting up a brand new computer, or your old diskette drive controller broke, and you are replacing it with an Omni-Bridge), don't worry. This chapter guides you through the configuration process.

Configuration settings are provided for:

- Drive A: Type
- Drive B: Type
- BIOS ROM Address
- I/O Address
- Drive Speed
- External Power Output

Once you have set all of these switches and jumpers, proceed to Chapter 2, *Hardware Installation*, to install the Omni-Bridge board in your computer.

Which Way Is On?

To configure the Omni-Bridge board, you need to set several switches on the Omni-Bridge board. These switches are either rocker-type switches or slide-type switches. The on and off positions for these switches are as follows:

Rocker Type:
For ON, press the top part of the rocker. For OFF, press the bottom part of the rocker.

Slide Type:
For ON, slide the switch up. For OFF, slide the switch down.

See the figure titled *On and Off Switch Positions.*

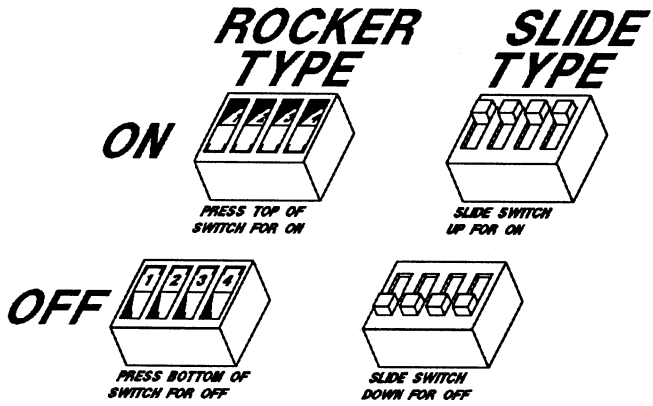


Figure 1-1. *On and Off Switch Positions*

Setting the Drive-Type Switches

Switch bank SW1 is a bank of four miniature switches on the upper left corner of the Omni-Bridge board. See the figure titled *Locating the Drive Type Switches*.The drive type switch is relevant only if the Omni-Bridge is the only diskette drive controller in the computer. If the Omni-Bridge is installed in addition to an existing diskette drive controller, the setting of this switch does not matter.

This switch bank tells the computer what type of drives are attached to the Omni-Bridge's internal connector. Switches 1 and 2 are for drive A; switches 3 and 4 are for Drive B:. The figure titled *Setting the Drive Type Switches* tells how to set Switch 1 for your combination of drive types.

If you do not have a B: drive, it does not matter how switches 3 and 4 of SW1 are set.

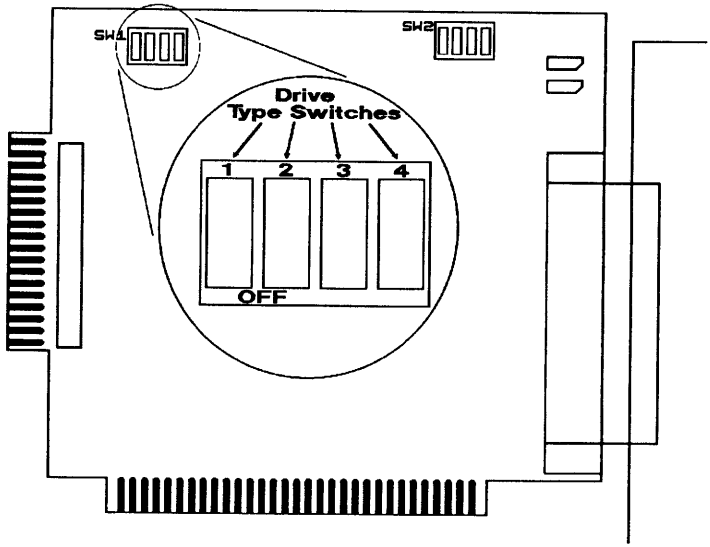


Figure 1-2. *Locating the Drive Type Switches*

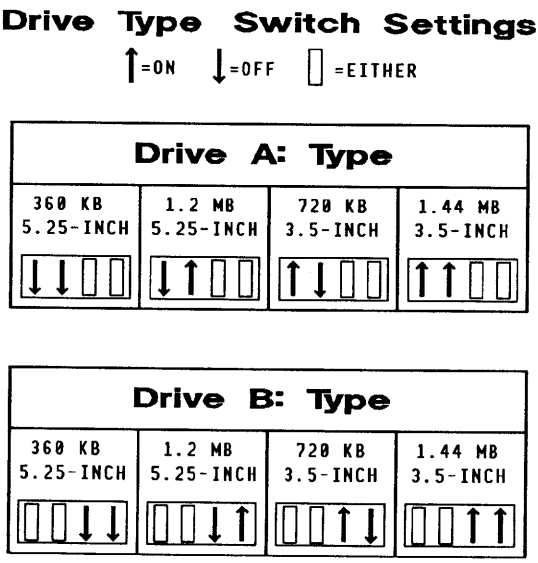


Figure 1-3. *Setting the Drive Type Switches*

Setting the BIOS ROM Address Switches

Switches 1 and 2 of Switch bank SW2 on the Omni-Bridge board set the Omni-Bridge's BIOS ROM address. See the figure titled *Locating the BIOS ROM Address Switches.* Don't worry if you don't know what a BIOS ROM is; you don't have to know that to set the switches. The switches on the Omni-Bridge board must be set so that its BIOS ROM does not use the same address as the BIOS ROM of some other board in your computer.

The SETUP program tells you how to set the BIOS ROM address switches. If you are not able to run SETUP (i.e. you are installing the Omni-Bridge in a new computer system which does not already have a diskette drive controller), set the BIOS ROM address switches for the default setting, **CA00**. See the figure titled *Setting the BIOS ROM Address Switches.* Install the Omni-Bridge before installing any fixed disk controller. If the system works properly before the fixed disk controller is installed, but not after, try one of the other two BIOS ROM addresses.

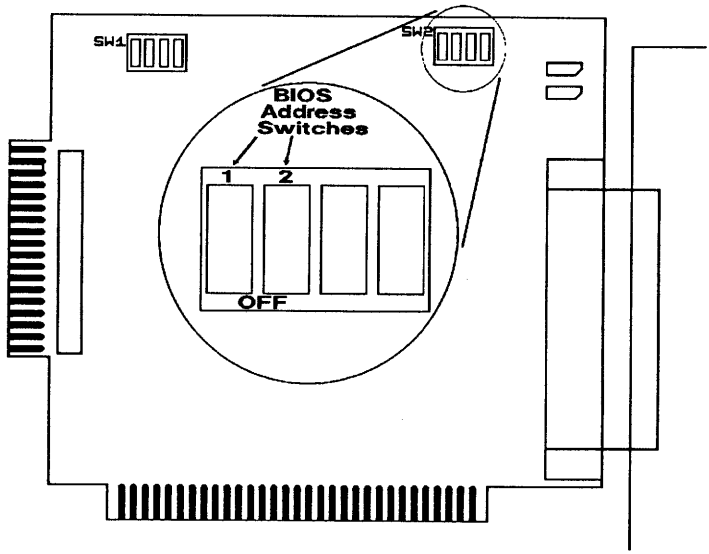


Figure 1-4. *Locating the BIOS ROM Address Switches*

BIOS Address Switch Settings

↑=ON ↓=OFF □=EITHER

BIOS Address			
NONE	CA00	CC00	CE00
↓ ↓ □ □	↓ ↑ □ □	↑ ↓ □ □	↑ ↑ □ □

Figure 1-5. *Setting the BIOS ROM Address Switches*

Setting the I/O Address Switch

Switch 3 of Switch Bank 2 is the I/O Address switch. See the figure titled *Locating the I/O Address Switch*. This switch selects one of two I/O addresses for the Omni-Bridge. The I/O address used for your Omni-Bridge will depend on whether the Omni-Bridge is to be the only floppy controller in the computer, or whether the Omni-Bridge will coexist with the floppy controller already installed.

If the Omni-Bridge is to be the only floppy controller in your computer, set switch 3 of Switch Bank 2 to OFF. This selects I/O address 3FX (3F0-3F7).

If the Omni-Bridge is to coexist with a floppy controller that is already installed in your computer, set switch 3 of Switch Bank 2 to ON. This selects I/O address 37X (370 - 377).

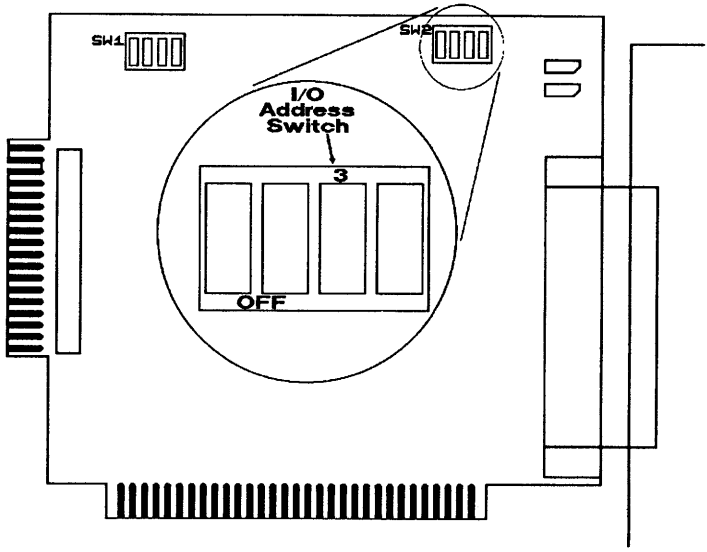


Figure 1-6. *Locating the I/O Address Switch*

I/O Address Switch Settings

↑=ON ↓=OFF ▯ =EITHER

I/O Address	
3F0 - 3F7 (DEFAULT)	370 - 377 (ALT.)
▯▯↓▯	▯▯↑▯

Table 1-1. *Setting the I/O Address Switch*

Setting the Drive Speed Switch

There are two different ways a 1.2 Mbyte drive can accommodate 360 Kbyte diskettes. One way is for the drive to spin the diskette at the same speed (300rpm) and use the same data transfer rate (250 kb/s) as a 360 Kbyte drive. These drives are called Dual Speed drives, since they can spin diskettes at two different speeds. The other way is to spin 360 Kbyte diskettes at the same speed as 1.2 Mbyte diskettes (360 rpm), and compensate for the extra speed with a slightly higher data transfer rate than that usually used for 360 Kbyte diskettes (300 Kb/s versus 250 Kb/s). Drives which use this method are called Fixed Speed drives, since they spin both 360 Kbyte and 1.2 Mbyte diskettes at the same speed

Certain versions of Omni-Bridge board do not work properly with high capacity drives which are configured for Fixed Speed operation. To determine if your Omni-Bridge board is one of these versions, check the number of crystal oscillators on the Omni-Bridge board. If there are two crystal oscillators on the board, then your version of Omni-Bridge will work with fixed speed drives. If there is only one crystal oscillator, the board will not work with fixed speed drives.The crystal oscillators are shiny metal rectangles mounted immediately below Switch Bank 1 on the Omni-Bridge board, at locations Y1 and Y2.

Switch 4 on Switch Bank 2 is the Drive Speed switch. See the figure titled *Locating the Drive Speed Switch.* On single-crystal versions of Omni-Bridge, the Drive Speed switch should always be set to ON. On two-crystal versions of Omni-Bridge board, this switch should be set to OFF if any 1.2 Mbyte 5.25-inch fixed speed diskette drives are installed, or to ON if any 1.2 Mbyte 5.25-inch dual speed diskette drives are used.

If you install any 1.2 Mbyte 5.25-inch diskette drives in your computer using a single-crystal version of Omni-Bridge, consult Appendix A, *Configuring Diskette Drives for Dual Speed Operation.* to properly configure the drives for dual speed.

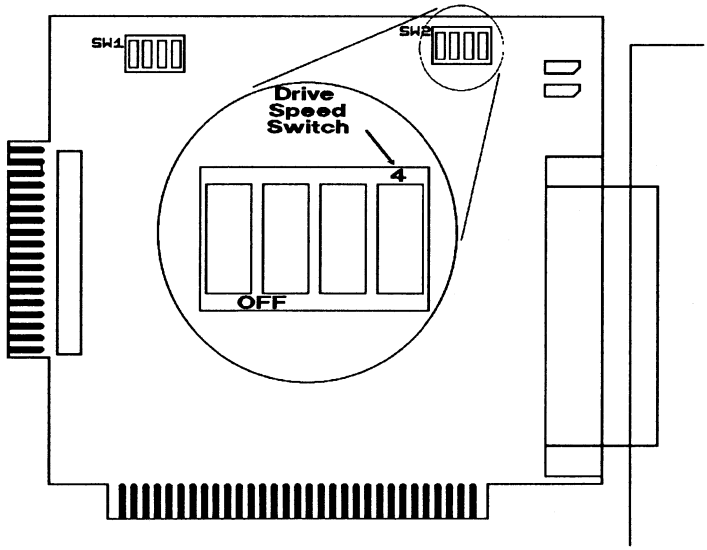


Figure 1-7. *Locating the Drive Speed Switch*

Drive Speed Switch Settings

↑=ON ↓=OFF □=EITHER

Drive Speed	
Fixed Speed	Dual Speed
□□□↓	□□□↑

Table 1-2. *Setting the Drive Speed Switch*

Setting the External Power Jumpers

Jumpers W1 and W2 on the Omni-Bridge board allow power to be drawn from the computer's power supply to power an external drive. These jumpers are only relevant if you want to plug a SYSGEN Bridge-File, Bridge-Tape, or PSF-360 into the external connector on your Omni-Bridge board. See the figure titled *Locating the External Power Jumpers.*

External Power is turned ON when jumper blocks are placed on the pins of W1 and W2 which are closest to the edge of the board.

External Power is turned OFF when jumper blocks are placed on the pins of W1 and W2 which are closest to the middle of the board.

External Power should be turned OFF unless it is specifically needed to power a SYSGEN Bridge-File, Bridge-Tape, or PSF-360.

When you are finished with this configuration procedure, you can go on to install the Omni-Bridge in your computer, as explained in the next chapter.

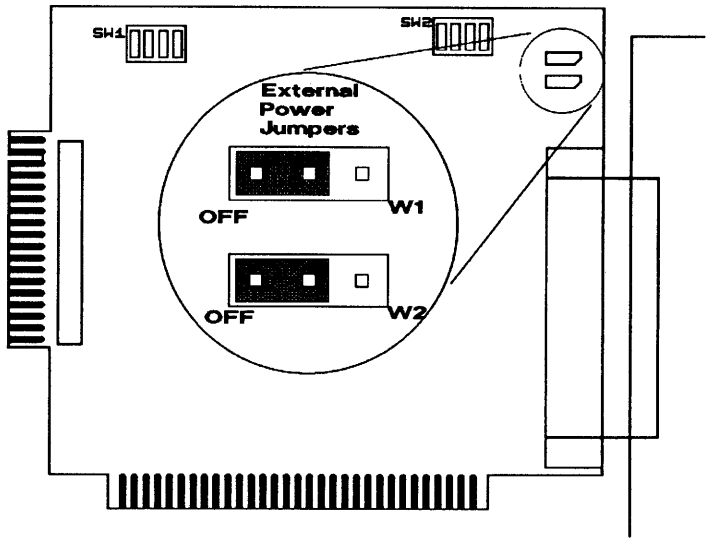


Figure 1-8. *Locating The External Power Jumpers*

External Power Jumper Settings

External Power	
OFF	**ON**

Table 1-3. *Setting the External Power Jumpers*

Chapter 2

Hardware Installation

About This Chapter

This chapter provides instructions for installing the SYSGEN Omni-Bridge on your IBM PC, XT, AT, or compatible computer system.

Hardware installation of the Omni-Bridge is divided into three distinct phases:

- Opening the computer
- Installing the Omni-Bridge
- Closing the computer.

The second phase, plugging in the board, has two possibilities:

- You are replacing your existing floppy controller board with the Omni-Bridge
- You are installing the Omni-Bridge in addition to your existing floppy controller board.

These possibilities are referred to as Replacement Installation and Coexistent Installation, respectively.

Before You Begin

Before you begin the hardware installation, make sure that you have all of the necessary hardware and tools at hand:

- Omni-Bridge adapter board
- Medium-size flat-blade screwdriver

Hardware Installation Procedure

If you have ever installed expansion boards or adapters in your PC before, the following hardware installation instructions will probably be familiar to you. If, however, you have never even seen the inside of your PC, don't worry. The installation is simple if you read these instructions and follow them step by step.

Phase 1: Opening Up the Computer

1. For your personal safety, turn off power to the computer and all connected peripherals such as printers, monitors, etc.
2. Unplug the computer's power cord from the wall outlet and from the back of the computer.
4. Remove the computer's cover. If your PC is like most IBM PC and compatible computers, the cover is held on with five screws on the back of the computer. See the figure titled *Removing The Cover.* If, however, your computer is different from what is shown, consult the documentation that came with your computer.

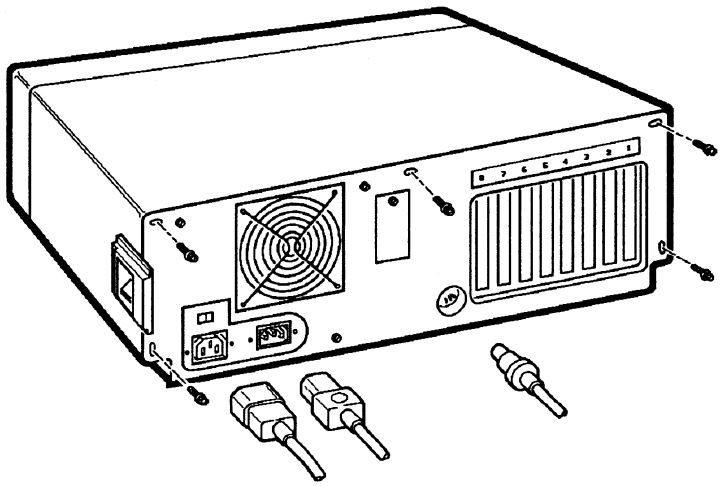


Figure 2-1. *Removing Cables and Screws*

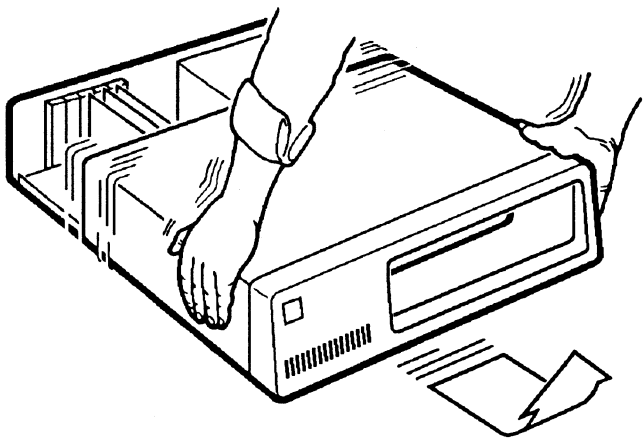


Figure 2-2. *Removing the Computer Cover*

Phase 2: Installing the Omni-Bridge

There are two ways to install the Omni-Bridge, depending on whether you are replacing you original diskette drive controller or installing the Omni-Bridge as an additional controller. Go to the subheading *Replacement Installation* or *Coexistent Installation*, depending on which best describes your installation.

Replacement Installation

1. Locate your computer's diskette drive controller. This will be a circuit board that is plugged into one of the computer's expansion slots. Trace the flat ribbon cable that runs from the diskette drive(s) to a circuit board to positively identify the drive controller.
2. Remove the diskette drive controller from the computer. The controller is held in place by a single screw near the back wall of the computer. After removing the screw, pull the controller straight up out of its slot.
3. Locate Pin 1 on the computer's diskette drive cable. Pin 1 on the cable should be marked by a colored stripe along one edge of the cable. If there is no colored stripe on the cable, look for markings on the controller or on the diskette drive(s) which might indicate the location of Pin 1 on the cable. Usually, Pin 1 on the cable connector of a diskette drive controller board is nearest the top edge of the board, but this is not always the case.
4. After locating Pin 1 and noting its location, unplug the cable from the controller.
5. Install the Omni-Bridge board in the expansion slot vacated by the old diskette drive controller. Reinstall the screw which secured the old controller. Refer to the figure titled *Installing the Omni-Bridge Board.*
6. Plug the computer's diskette drive cable into the 34-position edge connector on the Omni-Bridge board so that Pin 1 of the cable is nearest the top edge of the Omni-Bridge board.

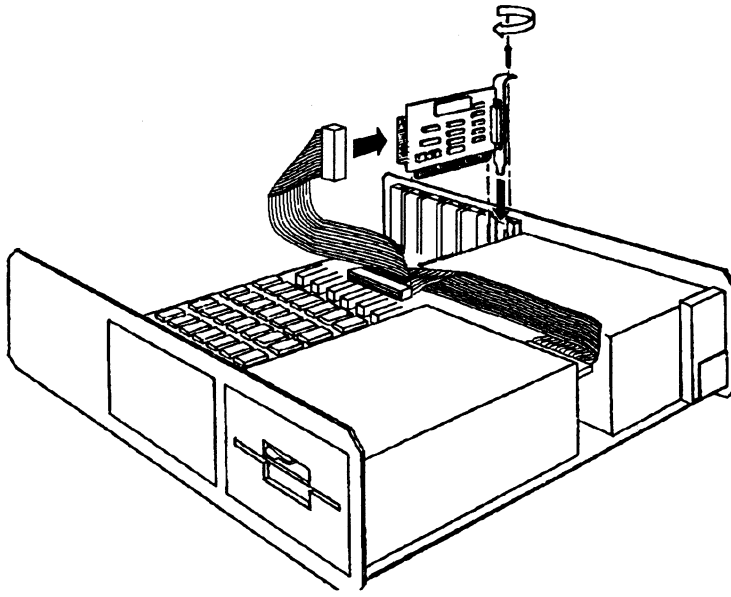


Figure 2-3. *Installing the Omni-Bridge Board*

Coexistent Installation

1. Find an empty expansion slot in your computer's expansion bus. Remove the slot cover (if any) on the back wall of the computer behind the empty slot. The slot cover is secured with a single screw.
2. Install the Omni-Bridge in the empty slot and secure it with the screw that held the slot cover in place.
3. If you are planning to install any internal diskette drives and connect them to the Omni-Bridge, install them at this time. Refer to the instructions that came with the diskette drive, or to the appendix near the back of this book titled *Installing Internal Diskette Drives* for more information.

Phase 3: Closing Up the Computer

1. Reinstall the cover of the computer and secure it with the five screws which were removed to take the cover off. See the figure titled *Replacing the Cover.*
2. Reconnect the power cord and all cables to the back of the computer. See the figure titled *Replacing Cables and Screws.*
3. Plug the computer's power cord back into the wall outlet.

The Hardware Installation for the Omni-Bridge is now complete. Refer to the chapter titled *Software Installation* to perform the software installation.

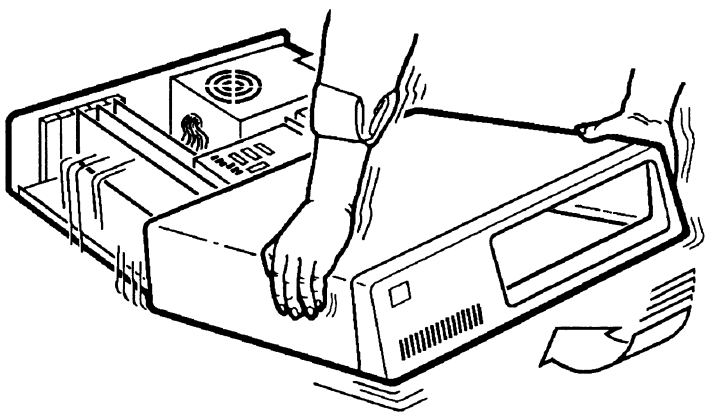


Figure 2-4. *Replacing the Computer Cover*

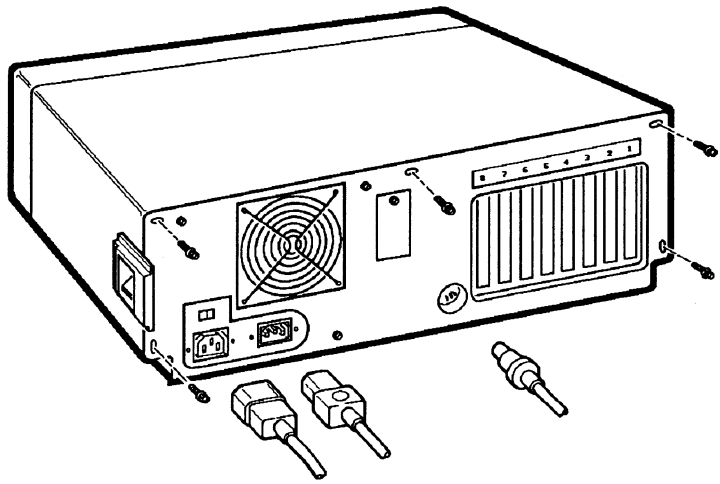


Figure 2-5. *Replacing Cables and Screws*

Chapter 3

Software Installation

About the Software Installation

This chapter addresses the installation of software required to use the Omni-Bridge. This software installation should be done if you have any external drives connected to the Omni-Bridge, or if the Omni-Bridge is installed so it coexists with another floppy controller already in your computer. If you are connecting any SYSGEN external diskette drives (like the Bridge-File) to the Omni-Bridge, perform this software installation instead of the installation for the software that came with the drive.

The software installation can be automatically performed by the program INSTALL.EXE. This program automatically determines what, if any, software installation is necessary, and performs it. If you are in any doubt whether or not you need to perform the Omni-Bridge's software installation, go ahead and run the INSTALL program. If no software installation is needed for your configuration, the program will tell you this, and then exit.

The software installation in this chapter **does not apply to SYSGEN Bridge-Tape units.** If you are installing a Bridge-Tape unit using the Omni-Bridge controller board, refer to the chapter on *Software Installation* in your *Bridge-Tape Owner's Manual* to install the Bridge-Tape's software. Also refer to Chapter 4, *Installing SYSGEN External Drives* in this manual for specific material about installing the Bridge-Tape's software.

The Omni-Bridge's software installation can be accomplished either manually or automatically. Two sets of instructions are provided here depending on whether you want to install the software manually or automatically. If you are not familiar with such things as device drivers and CONFIG.SYS files, you should probably use the automatic software installation.

This chapter also tells how to use the OMNIVIEW and OFORMAT programs. OMNIVIEW identifies what drive letters are assigned to certain diskette drives connected to the Omni-Bridge. OFORMAT is a program that must be used to format certain types of diskettes under earlier versions of DOS.

Automatic Software Installation Instructions

To perform the automatic software installation, first boot your system as you normally would. Next, insert the Omni-Bridge software diskette into Drive A:. Move to Drive A: by typing:

A: <Enter>

At the A> prompt type:

INSTALL <Enter>

This loads the Omni-Bridge installation program. The program prompts you for information about the configuration of your computer system. If you do not have a fixed disk drive on your system it also prompts you to insert your boot diskette into Drive A:. After running the install program, you must re-boot your system before you can use any of the newly-installed external drives.

Functions Performed By INSTALL

When your system boots, it checks both connected devices and the list of special-purpose drivers in CONFIG.SYS and assigns logical drive designations in sequence.

The INSTALL program which comes with your Omni-Bridge inserts the appropriate diskette device driver statement in the last position of your CONFIG.SYS file. If you do not have a CONFIG.SYS file, The INSTALL program creates one for you. The INSTALL program also copies the appropriate diskette device driver to the root directory of your boot disk.

Manual Software Installation Instructions

When installing the Omni-Bridge software manually, first copy the file OMNIBRG.SYS from the Omni-Bridge utilities diskette to the root directory of your boot disk or diskette.

Next, use your favorite text editing program (for example, Wordstar, EDLIN, etc.) to add the following line to your CONFIG.SYS file:

DEVICE = OMNIBRG.SYS /D:x /D:x /D:x /D:x

where the first two /D:s refer respectively to the first and second diskette drive attached to the Omni-Bridge's internal connector, and the last two /D:s refer respectively to the first and second drives attached to the Omni-Bridge's external connector, and where x =

0	System drive (Any A: or B: drive)
1	No drive
2	360 Kbyte 5.25-inch
3	1.2 Mbyte 5.25-inch
4	720 Kbyte 3.5-inch
5	1.44 Mbyte 3.5-inch

Suppose, for example, you are installing an Omni-Bridge in a computer so that it is the only floppy controller in the computer. Suppose also that Drive A: is a 360 Kbyte 5.25-inch diskette Drive, B: is a 1.2 Mbyte 5.25-inch diskette drive, and there is a single external 1.44 Mbyte 3.5-inch drive installed. In this case, the line to add to the CONFIG.SYS file would be:

DEVICE = OMNIBRG.SYS /D:0 /D:0 /D:5 /D:1

As a second example, if the Omni-Bridge is installed so that it coexists with a floppy controller already in the computer, and a single external 3.5-inch 1.44 Megabyte diskette drive is connected to the Omni-Bridge, the line in the CONFIG.SYS file should read:

DEVICE=OMNIBRG.SYS /D:1 /D:1 /D:5 /D:1

If you have any device drivers for RAM disks installed in your CONFIG.SYS file, the Omni-Bridge DEVICE line should follow the line for the RAM disk.

Note that if you make any changes to your CONFIG.SYS file, you must reboot your system before the changes take effect.

First and Second Omni-Bridge Drives

When installing the Omni-Bridge software, you may need to know the definition of "First Diskette Drive" and "Second Diskette Drive."

If you are installing the Omni-Bridge so that it replaces your original diskette drive controller, your A: drive is your first internal diskette drive, and B: is your second internal diskette drive.

On both of the Omni-Bridge's connectors, the first diskette drive is the one that responds to drive select DS0, and the second diskette drive is the one that responds to drive select DS1. Generally, this means that the diskette drive plugged into the cable connector at the end of the cable or nearest the twist in the cable will be the first diskette drive, and the drive plugged into the other connector is the second drive. This may not be the case if your

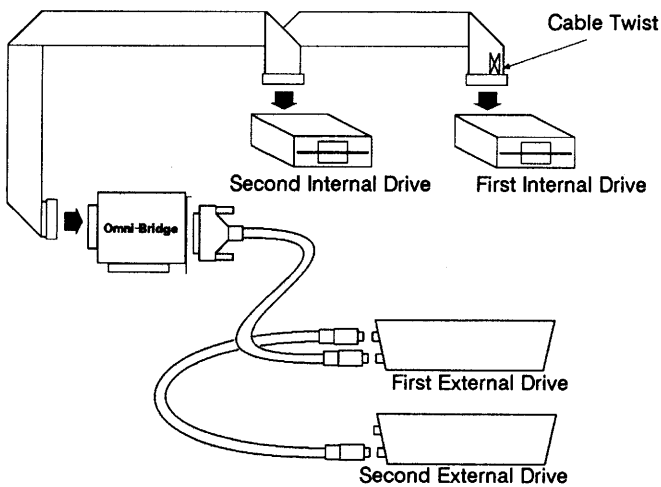


Figure 3-1. *First and Second Omni-Bridge Drives*

ribbon cable doesn't have a twist in it, or if your diskette drives aren't both set to drive select DS1. For a more in-depth explanation of drive select, see the appendix titled *Installing Internal Diskette Drives.*

For SYSGEN Bridge-File external diskette drives, the first drive is always the one connected to the Omni-Bridge through its bottom 37-pin connector, and the second drive is the drive daisy-chained to the first.

See the figure titled *First and Second Omni-Bridge Drives.* For more information about installing SYSGEN Bridge-File drives, see the chapter titled *Installing SYSGEN External Drives.*

Using OMNIVIEW.COM

OMNIVIEW.COM is a program that identifies which drive letters are assigned to diskette drives connected to the Omni-Bridge.

If the Omni-Bridge is the only floppy controller in the computer, the two internal diskette drives connected to the Omni-Bridge are always A: and B:. In all other installations involving either external drives or an Omni-Bridge installed so that it coexists with another floppy controller, drive letters are assigned in a sequence depending on the presence of hard disks and RAM disks. In such a case, OMNIVIEW must be used to determine what drive letters are assigned to the diskette drives connected to the Omni-Bridge.

To use this program, insert the Omni-Bridge software diskette into drive A: and at the A> prompt type:

OMNIVIEW <Enter>

Formatting Diskettes

To format diskettes on a diskette drive connected to an Omni-Bridge, **use the DOS Format utility if you are running DOS version 3.3 or later.** For earlier version of DOS, use the OFORMAT utility included on your Omni-Bridge program diskette.

Use OFORMAT under these conditions:

- To format 1.44Mb 3.5-inch diskettes when using **DOS 3.2.**
- To format 720Kb and 1.44Mb 3.5-inch diskettes when using **DOS 3.0 and 3.1.**
- To format all 3.5-inch diskettes and to format 1.2Mb 5.25-inch diskettes when using **DOS 2.1.**

Running OFORMAT

OFORMAT allows you to format 3.5-inch and 5.25-inch diskettes. If you type the program name, OFORMAT, a summary of the command features will be displayed.

To format a diskette, type the command followed by the appropriate switch:

OFORMAT d: /F:n /V

where: d: = drive letter

options: /F:1 = 360-Kilobyte Double-sided, double density
/F:2 = 1.2-Megabyte High density
/F:3 = 720-Kilobyte Normal density
/F:4 = 1.44-Megabyte High density
/V = prompt for volume label
/V: volume label = specify volume label on command line

Note:
OFORMAT does not have the /S switch used by the DOS FORMAT utility to create a bootable diskette. In order to create a bootable diskette with OFORMAT, use the SYS command to copy IBMBIO.COM and IBMDOS.COM to your diskette. Then use the regular COPY command to copy COMMAND.COM to your diskette. Refer to your DOS manual for instructions on using the COPY and SYS commands.

Chapter 4

Installing SYSGEN External Drives

About This Chapter

This chapter provides instructions for installing SYSGEN Bridge-File, Bridge-Tape, and PSF-360 external drives on a computer that has an Omni-Bridge controller installed.

SYSGEN's Bridge-File

The SYSGEN Bridge-File is an add-on 5.25-inch or 3.5-inch diskette subsystem, primarily designed to enhance software compatibility between the IBM PC and PS/2 lines of products. Installing a 3.5-inch 1.44 Mbyte Bridge-File on your computer would allow you to read, write, and format the 3.5-inch high-capacity diskettes used by the IBM PS/2 line of computers.

SYSGEN's Bridge-Tape

The SYSGEN Bridge-Tape is an add-on 42 Mbyte tape backup subsystem which uses the popular DC2000 quarter-inch tape cartridge. Installing a Bridge-Tape on your computer would allow you to backup 42 Mbytes of data on a tape cartridge smaller than a deck of cards.

SYSGEN's PSF-360

The SYSGEN PSF-360 is an add-on 5.25-inch 360 Kbyte diskette drive subsystem. The PSF-360 provides PS/2 users with low-cost 5.25-inch compatibility; the PSF-360 can also be installed on PC and compatible computers using the Omni-Bridge controller

board instead of the PSF-360 adapter board included with the PSF-360 unit.

Power for External Drives

Power for external SYSGEN drives can be supplied by the Omni-Bridge controller through the D-shell connector on the back of the board. See Chapter 1, *Configuring the Omni-Bridge*, to correctly set the external power jumpers on the Omni-Bridge board.

If you have an early PC or compatible computer with a 63-watt power supply, we recommend that you use a SYSGEN auxiliary power supply to provide power for your 3.5-inch Bridge-File or Bridge-Tape unit.

Before You Begin

Before you begin, make sure you have all the necessary hardware and tools at hand:

- Shielded Interface Cable
- External Drive Unit
- Medium-size Flat Blade Screwdriver

Hardware Installation for SYSGEN Drives

1. Turn off power to the system unit and all connected peripherals such as printers and modems.
2. Unplug the system unit power cord from the wall outlet.
3. Connect either end of the Shielded Interface Cable to the 37-position D-shell female connector on the back of the Omni-Bridge board. This connector protrudes through a slot in the back of the computer. The cable is secured by two thumbscrews.

4. Connect the other end of the Shielded Interface Cable to the appropriate 37-pin connector on the back of the external drive unit, as follows:

   - Bridge-Tape - Top Connector
   - Bridge-File - Bottom Connector

   Secure the cable by tightening the two thumbscrews on the cable connector. See the figure titled *Connecting the External Interface Cable*.

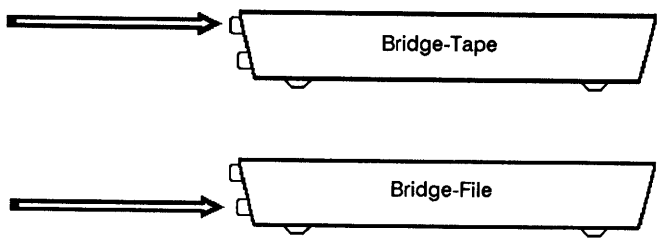


Figure 4-1. *Connecting The External Interface Cable*

5. If you are using an Auxiliary Power Supply, connect the DC power cable of the Auxiliary Power Supply to the 9-pin D-shell connector on the back of the the Bridge-File unit .
6. If you are using an Auxiliary Power Supply, connect the AC power cord of the Auxiliary Power Supply to any available 3-prong 110v power outlet. Do not use a 2-prong outlet.
7. If you are installing additional Bridge products, follow this same procedure for each.
8. Plug the system unit power cord back into the wall outlet.

   This completes the hardware installation for SYSGEN external drives on the Omni-Bridge.

Software Installation for SYSGEN Drives

After connecting a SYSGEN external drive to the Omni-Bridge, you must perform the software installation for that unit. In some cases (as for the Bridge-File and PSF-360) you must perform the Omni-Bridge software installation instead of the software installation specified in the manual for the drive.

Software Installation for Bridge-File, PSF-360

If you just installed a Bridge-File or PSF-360, refer to the chapter titled *Software Installation* in **this** Owner's Manual to perform the Omni-Bridge's software installation. Do not perform the software installation specified in the owner's manual that came with the drive. Perform the Omni-Bridge's software installation instead.

Software Installation for Bridge-Tape

If you just connected a Bridge-Tape unit to the Omni-Bridge, refer to the chapter titled *Software Installation* in the Bridge-Tape Owner's Manual to perform the software installation. During the installation, the installation program will ask you the following question:

DOES YOUR COMPUTER HAVE A TAPE ADAPTER BOARD INSTALLED?

The correct answer for a Bridge-Tape unit connected to the Omni-Bridge board is **N** for no.

After installing the Bridge-Tape software, there are two SETUPS values for the Bridge-Tape software you must check to make sure are properly set. To check these values, first start the TAPE program as shown in the Bridge-Tape Owner's Manual. From the TAPE software's Main Menu, press the **F3** key to select **Utilities.**

From the Utilities Menu, press the **F6** key to select **More.** This will show you the second utilities screen. From the second utilities screen, press the **F6** key to select **Setups.**

The following questions will appear on the **Setups** screen:

USE PRIMARY DISKETTE CONTROLLER ADDRESS?

USE PRIMARY TAPE ADAPTER ADDRESS?

If the Omni-Bridge is installed so that it is the only floppy controller in your computer (i.e. a replacement installation), both of these should be set to **Y** for Yes. If the Omni-Bridge is installed so that it coexists with another floppy controller, both of these should be set to **N** for No.

Daisy Chaining

Up to two of the SYSGEN Bridge family of external drives can be installed on a computer which has an Omni-Bridge controller board installed. This is called daisy chaining; the first Bridge unit is connected to the computer, while the second Bridge unit is connected to the first. Daisy chaining configurations for the Omni-Bridge are different from the daisy chaining configurations for the PSA 1030, PSA 1050, and PSA 1060 Bridge family adapters.

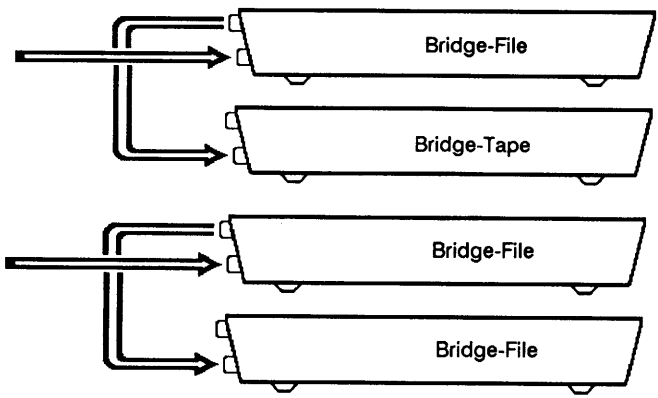


Figure 4-2. *Daisy-Chaining Configurations*

The figure titled *Daisy Chaining Configurations* shows the proper connections for external drives linked to the Omni-Bridge controller board.

The SYSGEN PSF-360 cannot be daisy chained. If you require a 360Kb drive that has daisy-chaining capabilities, you can use a Bridge-File 360.

Appendix A

Configuring 1.2 Mbyte Diskette Drives For Dual Speed Operation

About Dual Speed Operation

High capacity 5.25-inch diskette drives use two different methods of varying their Data Transfer Rate to accommodate the different transfer requirements of 360 Kbyte and 1.2 Mbyte diskettes.

All 1.2 Mbyte diskette drives spin 1.2 Mbyte diskettes slightly faster (360 rpm versus 300 rpm) than the older 360 Kbyte diskette drives would spin their diskettes. The 1.2 Mbyte diskette drives would also transfer data to 1.2 Mbyte diskettes at twice the data transfer rate (500 kilobits per second versus 250) used by the 360 Kbyte drives.

There are two different ways a 1.2 Mbyte drive can accommodate 360 Kbyte diskettes. One way is for the drive to spin the diskette at the same speed (300rpm) and use the same data transfer rate (250 kb/s) as a 360 Kbyte drive. These drives are called Dual Speed drives, since they can spin diskettes at two different speeds. The other way is to use the same speed as for 1.2 Mbyte diskettes (360 rpm), and compensate for the extra speed with a slightly higher data transfer rate than that usually used for 360 Kbyte diskettes (300 Kb/s versus 250 Kb/s). Drives which use this method are called Fixed Speed drives, since they always spin diskettes at the same speed

Certain versions of Omni-Bridge board will not work properly with high capacity drives which are configured for fixed speed operation. An Omni-Bridge board with a single crystal oscillator does not work with fixed speed drives. If there are two crystal oscillators on the board, then your version of Omni-Bridge will work with fixed speed drives. The crystal oscillators are shiny

metal rectangles mounted immediately below Switch Bank 1 on the Omni-Bridge board, at locations Y1 and Y2.

High capacity 5.25-inch diskette drives will work properly with single-crystal versions of the Omni-Bridge only if they are Dual Speed Drives. Virtually all 1.2 Mbyte 5.25-inch diskette drives can be configured so that they operate as Dual Speed Drives. The only 1.2 Mbyte 5.25-inch diskette drives you are likely to encounter that cannot be configured for Dual Speed operation are some manufactured specifically for IBM.

This appendix tells how to configure a few of the most popular 1.2 Mbyte 5.25-inch diskette drives for Dual Speed operation. You should confirm that any 1.2 Mbyte 5.25-inch diskette drives you are connecting to your Omni-Bridge are configured for Dual Speed operation.

Configuring the Fujitsu M2553K and M2554K

On the Fujitsu M2553K and M2554K diskette drives, jumper 1SP/2SP on the diskette drive should be in the 2SP position to configure the drive for Dual Speed operation. See the figure titled *Configuring the Fujitsu M2553K and M2554K.*

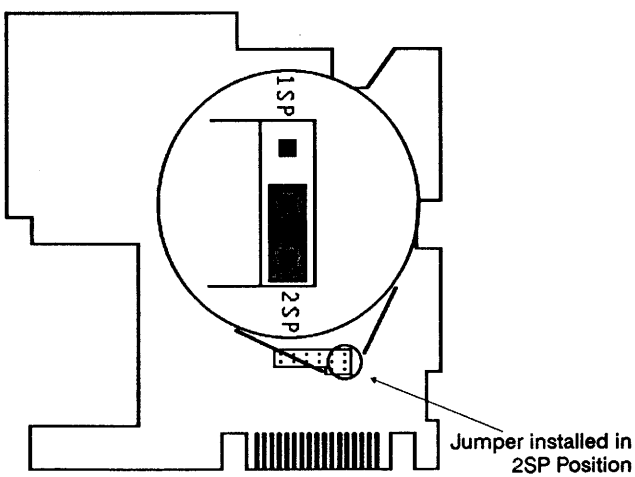


Figure A-1. *Configuring the Fujitsu M2553K and M2554K*

Configuring the Chinon FZ-506

On the Chinon FZ-506 diskette drives, jumpers should be installed on connector J1 at positions 1, 2, 6, 8, 11, and 12 to configure the drive for Dual Speed operation. See the figure titled *Configuring the Chinon FZ-506.*

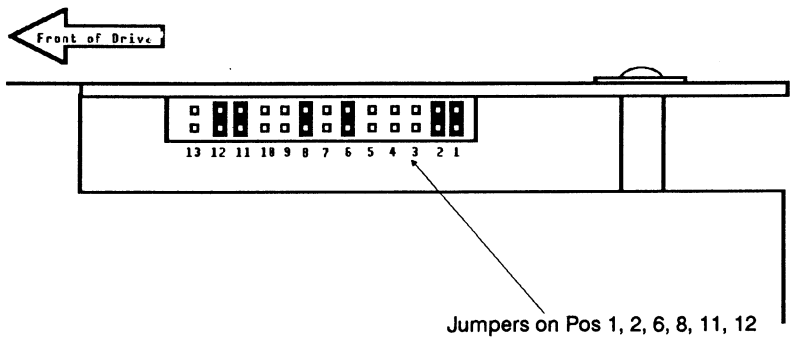


Figure A-2. *Configuring the Chinon FZ-506*

Configuring the Mitsubishi MF504C-3

On the Mitsubishi MF504C-3 diskette drives, jumper SS/SB should be in the SS position to configure the drive for Dual Speed operation. See the figure titled *Configuring the Mitsubishi MF504C-3*

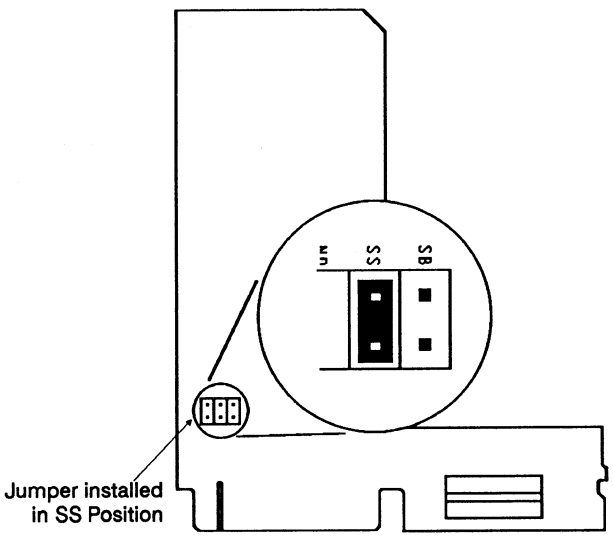


Figure A-3. *Configuring theMitsubishi MF504C-3*

Configuring the TEAC FD-55GFR-340/440/540

On the TEAC FD-55GFR-340/440/540 diskette drives, jumper I/II/IS should be in the IS position to configure the drive for Dual Speed operation. See the figure titled *Configuring the TEAC FD-55GFR-340/440/540*

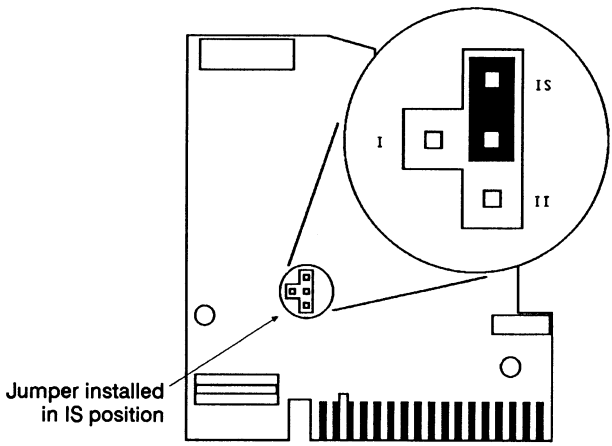


Figure A-4. *Configuring the TEAC FD-55GFR-340/440/540*

Appendix B

Omni-Bridge Interconnection Diagrams

About the Omni-Bridge's Connectors

Both the internal and external connectors on the Omni-Bridge have the same pin designations as the IBM PC, XT, and compatible diskette drive controllers.

About the Internal Connectors

The internal connnectors are a 34-position card-edge connector and a 34-position dual-row header connector. Both connectors have the same pinout. Either connector may be used. The internal connectors are shown in the figure titled *Location of the Internal Connectors*. The pinouts for the internal connectors are shown in the table titled *Internal Connector Pinouts*.

About the External Connector

The external connector on the Omni-Bridge is a single 37-position D-shell connector. The external connector is shown in the figure titled *Location of the External Connector*. The pin designations for the external connector are shown in the table titled *External Connector Pinouts*.

Note that if the External Power jumpers are in the ON position, +5V and +12V power is available at the external connector. See Chapter 2, *Configuring the Omni-Bridge*, to properly set the External Power jumpers.

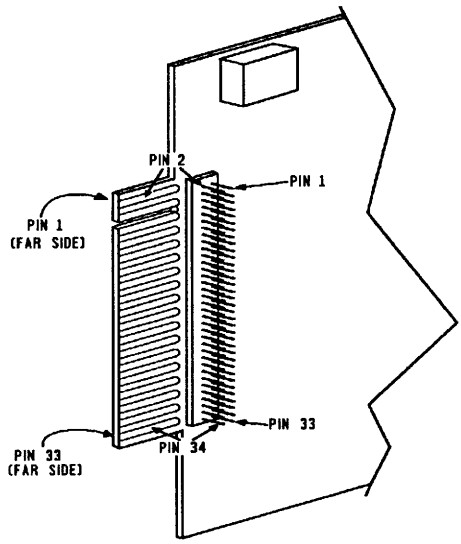


Figure B-1. *Location of the Internal Connectors*

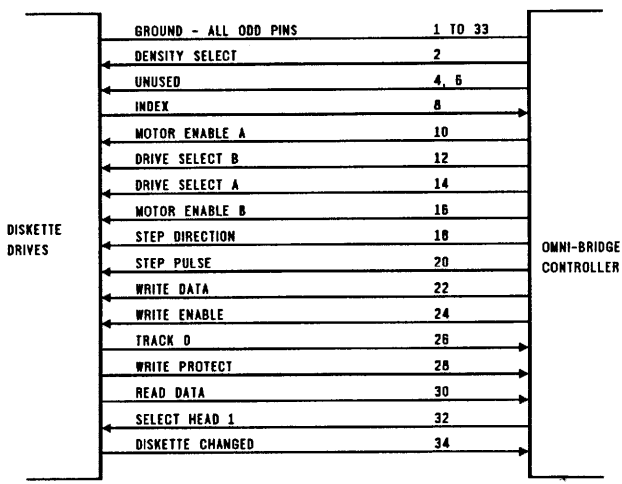


Table B-1. *Internal Connector Pinouts*

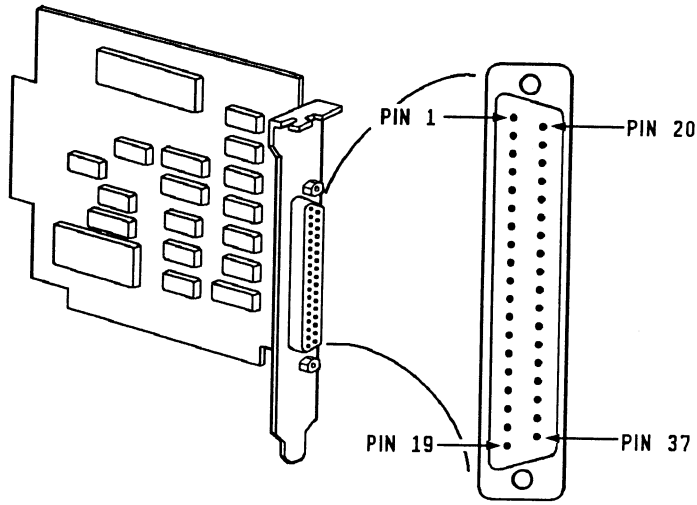


Figure B-2. *Location of the External Connector*

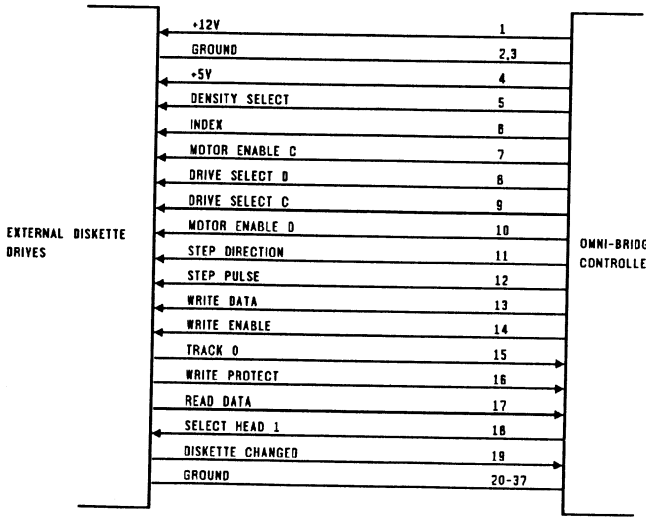


Table B-2. *External Connector Pinouts*

Appendix C

Installing Internal Diskette Drives

Physical Mounting

The physical mounting of diskette drives differs greatly from computer to computer and from drive to drive.

5.25-Inch Drives

Most 5.25-inch diskette drives have four mounting holes on each side and four mounting holes on the bottom. Care should be used in selecting the screws to mount the drive. The mounting holes in the diskette drive may be drilled and tapped for any one of a variety of inch or metric screw sizes. Some diskette drives may even have different sets of mounting holes tapped for different size screws. The most common mounting hole sizes are 6-32, M3 (metric), M3.5 (metric), and M4 (metric).

3.5-Inch Drives

Most 3.5-inch diskette drives are available with mounting brackets and a plastic bezel that allows them to be mounted in a standard 5.25-inch half-height drive mounting bay. If your 3.5-inch isn't so equipped and you want to install it in a 5.25-inch drive bay, the computer dealer who sold you the drive may have an adapter kit for such an installation.

AT Mounting

The IBM AT, and most AT-compatible computers have their diskette drives mounted on plastic guide rails, which simply slide into the front of the computer. Once in place, the drives are

secured with angle brackets which hold the ends of the guide rails in place.

Plastic guide rails for mounting diskette drives in AT and compatible computers are available at most computer stores. They usually come in sets of two, and may include the screws necessary to mount the rails to the drive. Some AT-compatible computers (Compaq and Tatung, for example) may require special drive mounting rails available only from the computer's manufacturer or dealers.

XT Mounting

The mounting of diskette drives in XT and compatible computers is more complicated than for the AT. These computers were originally designed when the only diskette drives available were 5.25-inch full-height units. These drives were usually mounted with only two mounting screws, both on the same side of the drive.

When mounting a single half-height diskette drive in a full-height drive bay of an IBM XT or compatible computer, an open space may be left on the front of the computer. You may need a cover plate, often called a "Blank Bezel," to cover this open space. The computer is designed so that the air circulation inside the case is most efficient when the cover is on and all drive bays are filled or covered. Most XT and compatible computers have a single cooling fan which draws air in from vents along the bottom edge of the front of the computer and exhausts it through a grill on the back of the power supply. This air circulation cools the computer's drives, circuit boards, and power supply. When one of the drive bays is left uncovered, the cooling air circulation may be "short circuited," so that a lot of air flows through the open space and out the exhaust grill, but little air flows over the computer's circuit boards. This may cause overheating and component failure.

When installing two diskette drives in a drive bay of an IBM XT or compatible computer, some ingenuity and innovation may be required. The XT was originally not designed to have more than a single drive in a drive bay. Mounting kits are available for stacking half-height drives, but their use is rarely simple or straightfor-

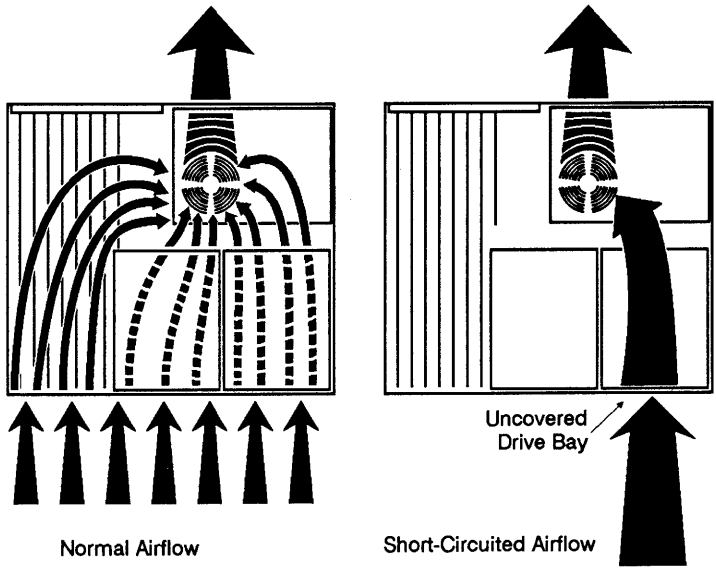


Figure C-1. *Airflow In a Typical XT-Type Computer*

ward, and they usually mount the drives with only marginal security.

Cables and Connections

The Omni-Bridge can be connected to up to two internal diskette drives through the internal connectors at the end of the board.

There are actually two internal connectors on the Omni-Bridge; a header (pin-type) connector and a card-edge connector. These two connectors, though of different types, have exactly the same function. The two types of connector are provided so that the Omni-Bridge can be plugged into cables that have either card-edge or header connectors.

The cable used to connect the Omni-Bridge to a diskette drive (or two) is a 34-position ribbon cable with one or two edge connectors near one end for the diskette drives, and either a card-edge or socket connector at the other end for the Omni-Bridge.

An important consideration in connecting the Omni-Bridge to diskette drives is the orientation of the connectors. If you plug the

cable in backwards to either the Omni-Bridge or a diskette drive, the drive won't work. Fortunately, it is usually very easy to get the cables connected properly. Often, the connectors are keyed so they will only go together the right way. Even if they're not keyed, there are only two possible orientations.

Usually, all you have to do is find a "pin 1" or "pin 2" marking near the connector of the Omni-Bridge or diskette drive. Then, find the edge of the cable which has a colored stripe running along it. Then, plug the cable into the connector so that the colored stripe is nearest the "pin 1" or "pin 2" marking of the connector. That's all.

Ribbon Cables

The wires inside the ribbon cable, called "conductors," are usually referred to by numbers ranging from 1 to 34. On almost all cables, there is a colored stripe running along one edge of the cable. This stripe marks the location of the first conductor of the cable, often referred to as "Pin 1" of the cable.

Card-Edge Connectors

Card edge type connectors consist of a row of gold-plated connection fingers on each side along the edge of a circuit board. These connectors have all of the even numbered fingers (2, 4, 6...32,

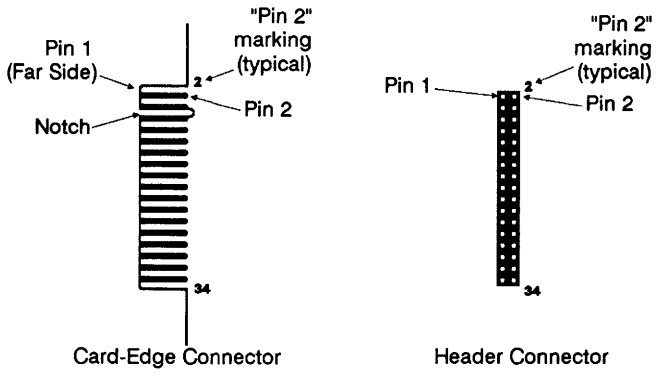


Figure C-2. *Card-Edge and Header Connectors*

34) on one side of the circuit board and all of the odd numbered fingers (1, 3, 5...31, 33) on the other side. These connection fingers are often referred to as "pins," as in "pin 1" through "pin 34." Pin 2 is always the first connection finger on one side of the board, while pin 1 is the first connection finger on the other side, and is located right under pin 2.

Depending on how the circuit board which the connector is on was made, there may be markings on the board which show the location of either pin 1, pin 2, pin 33, pin 34, or any combination of these.

Card edge connectors also usually have a notch sawed through the circuit board between two sets of connection fingers. This notch is always nearest the end of the connector where pin 1 is located. Cable connectors often have a "polarizing key" which fits into the notch on the card-edge connector. This feature prevents the cable from being connected incorrectly by not going together when the polarizing key is oriented away from the notch.

Header (Pin-Type) Connectors

Header connectors consist of two rows of gold-plated pins soldered into a circuit board. Header (pin-type) connectors have all of the even pins in one row, and all of the odd pins in the other row. All of the even pins are in one row, and all of the odd pins are in the other row, with pin 1 located next to pin 2.

Like card edge connectors, the location of any of the four corner pins (1, 2, 33, 34) may be shown by markings on the circuit board.

Drive Select

The term *drive select* refers to the process by which your computer selects a diskette drive from those drives available. Each diskette drive has a switch or jumper on it that sets that drive's drive select number. Whenever the computer sends instructions or data through the ribbon cable to the diskette drives, it also sends a signal down one of the cable's two drive select lines. Which drive select line it sends the signal down determines which diskette drive responds to the instructions or data.

Most diskette drives have four possible drive selects, usually abbreviated DS0 through DS3. Since the diskette drive connection scheme used by IBM only allows two diskette drives on a ribbon cable, only the first two drive select numbers, DS0 and DS1, are used for diskette drives in IBM compatible computers.

If more than one diskette drive responds to a drive select signal, the drives will interfere with each other, causing an error. Normally, this means that any two diskette drives on a ribbon cable must have their drive selects set to different values. There is, however, a common exception to this rule. Most diskette drive cables, particularly those for IBM computers, have lines 10 through 16 of the cable "twisted" between the connectors for the two diskette drives. The purpose of this twist is to reverse the drive select lines going to the diskette drive at the connector at the end of the cable. Thus, if the drive select of the drive plugged into the connector nearest the twist is set to DS1, that drive will actually respond when the computer selects DS0.

When using a ribbon cable with a twist near one of the connectors, the diskette drive plugged into the connector nearest the twist will respond to the opposite of its drive select. Thus, if the drive select of the drive plugged into the connector nearest the twist is set to DS1, the drive will respond to DS0.

If you are connecting two diskette drives to the Omni-Bridge with a cable with a twist in it, the drive selects of the two diskette drives must be set to the same value. For instance, if both drives are set to DS1 (as is the case with most IBM-compatible computers), the drive plugged into the connector with the twist will actually respond to DS0. See the figure titled *Three Drive Select Scenarios.*

All original IBM PC, XT, and AT computers have diskette drive ribbon cables with the twist in them. These computers usually have both diskette drives set to DS1; the drive nearest the cable twist responds to DS0.

Further, most diskette drive cables sold in computer stores have a twist in them, and most diskette drives sold in computer stores have their drive selects set to DS1.

When using a ribbon cable without a twist between the two diskette drives, the drive select switches or jumpers of both diskette drives on the ribbon cable must be set to different values.

The sure way to tell if both drives are responding to the same drive select is to see if the select lights of both drives come on at the same time. Try to select one of the drives by typing its drive letter, a colon, and pressing the **<Enter>** key. If the select light of more than one drive comes on, you probably have a drive select conflict.

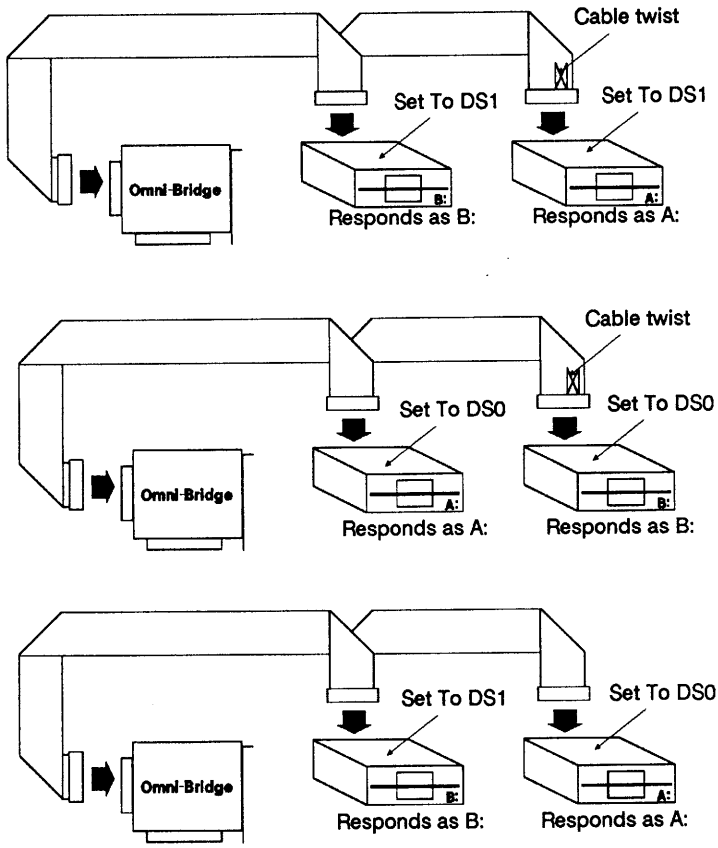


Figure C-3. *Three Drive Select Scenarios*

If you are connecting only a single internal diskette drive to the Omni-Bridge, it does not matter which connector on the ribbon cable you plug the drive into. Some ribbon cables may not even have connectors for two diskette drives. However, that drive must be set so that it responds to DS0.

Drive Termination

When connecting internal 5.25-inch diskette drives to the Omni-Bridge, one of the drives on the ribbon cable must be properly terminated. Most 3.5-inch diskette drives are not subject to termination. If you are connecting only 3.5-inch diskette drives to the Omni-Bridge, you can skip this section.

What Is Termination?

Terminating a diskette drive means making sure that a terminating resistor, also known as a *terminator* is properly connected to the drive.

A complete explanation of the function of the terminator is beyond the scope of this manual. However, the terminator can be thought of as a "shock absorber" that prevents signals from being reflected back down the ribbon cable after reaching the drive. Such reflections could cause spurious data errors while reading or writing diskettes.

Different diskette drive have different methods of connecting terminators, but there are generally only two ways of doing this. Information about locating a diskette drive's terminator should be supplied with the drive. If not, the dealer who sold you the drive can probably locate the terminator for you.

Removable Terminators

On some 5.25-inch drives, the terminating resistor is a removable part that is either installed to terminate the drive, or removed to make the drive unterminated.

The removable terminator is usually recognized by one of a number of clues. The terminator is usually in the vicinity of the drive's ribbon cable connector. The terminator may be a long nar-

row component with eight or ten pins in a single row that are plugged into a connector on the drive's circuit board. Alternatively, the terminator may be a 14- or 16-pin device that looks like an integrated circuit chip. In either case, the terminator is usually the only removable (i.e. installed in a socket) part on the drive's circuit board.

Switchable Terminators

On most other 5.25-inch drives, the terminating resistor is permanently installed, but may be electrically connected or disconnected fron the drive's circuitry by means of a set of switches. In such a case, setting all the switches to ON terminates the drive, and setting the switches to OFF removes the drive termination.

When To Terminate a 5.25-Inch Drive

If you have only a single 5.25-inch diskette drive connected to your Omni-Bridge, that drive should be terminated.

If you have two 5.25-inch internal diskette drives connected to your Omni-Bridge, the drive on the connector at the end of the ribbon cable should be terminated. The drive on the connector in the middle of the ribbon cable should be unterminated.

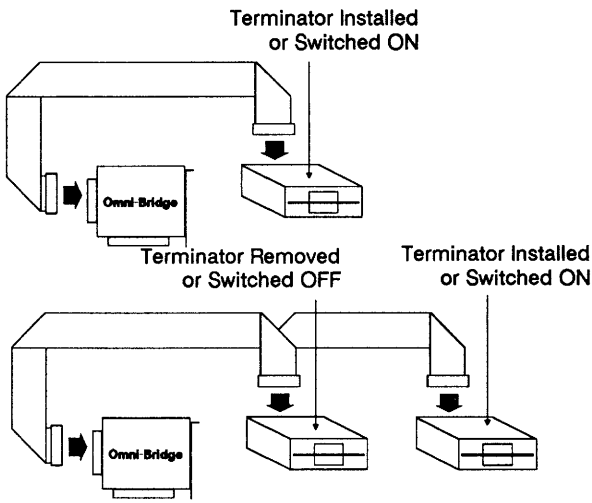


Figure C-4. *Terminating Internal 5.25-inch Drives*

If you have both a 5.25-inch internal diskette drive and a 3.5-inch internal diskette drive attached to the Omni-Bridge, the 5.25-inch drive should be terminated, regardless of its position on the ribbon cable. The termination for 3.5-inch diskette drives usually can't be changed and doesn't matter anyway.

Drive Power

All diskette drives for PC, XT, AT and compatible computers require 5-volt and 12-volt power to operate. This power is usually obtained from your computer's power supply. When you install an internal diskette drive in your IBM PC, XT, AT, or compatible computer, you should connect that drive to your computer's power supply.

There will probably be a number of cables attached to your computer's power supply. Generally, these cables consist of two black wires, one red wire, and one yellow wire, ending at a white connector. Some of these cables may already be plugged into drives or accessories inside your computer, and some of them may be unused and hanging free inside your computer. When installing an internal diskette drive, simply plug one of these tri-color power cables into the matching connector on the back of your diskette drive.

If all of your computer's power cables are in use, this might be a pretty good clue that the power supply in your computer is loaded down to somewhere near its maximum capacity. If your computer is one of the early PCs equipped with a 63 watt power supply, or if you have a large hard disk or tape drive installed, you may want to get a heavy duty (130 to 220 watt) power supply for your computer.

Many computer stores sell adapter cables that let you connect more than one drive to one of the tri-color power cords on your computer's power supply. These cables usually have one connector that fits the power cable's connector, and two connectors that fit the power connectors of your disk drives.

Glossary

AC Power AC power (alternating current) is the electricity that is delivered through standard, domestic wall outlets. AC power comes in two voltages: 120 volts in the U.S. and Canada, and 220 volts just about everywhere else. Before you plug anything into a wall outlet, make sure that it will work with the AC power voltage that is available in your locale. Most equipment that can be plugged into wall outlets will have the appropriate voltage marked on it.

Adapter An adapter is a circuit board that allows you to plug a device, such as a printer, disk drive, or video monitor, into your computer.

Backup A backup consists of duplicate data stored on a floppy diskette or cartridge tape for later retrieval. This data is usually retrieved only if the data stored on the primary system becomes unreadable.

Bezel A bezel is the stylish front panel of a computer or computer accessory.

Bit A bit is the basic unit of computer information. A bit can be in one of two states: 1 or 0.

Boot The term "boot" refers to the setting up and loading of the operating system in the computer's main memory. This is an automatic process that occurs in two forms: the warm boot, caused by simultaneously pressing the CTRL, ALT and DEL keys, and the cold boot, caused by turning the computer system's power on.

Byte A byte is composed of eight bits. A byte can arranged in any one of 256 combinations from 00000000 to 11111111. A byte is nominally accepted to be equivalent to one character of information.

Card Edge Connector A card edge connector, or simply edge connector, is a type of connector which uses gold-plated conduc-

tors built into the edge of a circuit board. A card edge connector can connect a circuit board to a cable, as with most disk and tape drives, or can connect a circuit board to another circuit board, as with IBM PC or PS/2 expansion boards.

Cleaning Diskette A cleaning diskette is a device that is used to clean the read/write heads of a diskette drive. It looks like a regular diskette, but has head-cleaning materials where a regular diskette would have magnetic media.

CONFIG.SYS CONFIG.SYS is your computer's configuration file. This file contains text information about the computer's configuration, and lists the device drivers the computer needs to load in order to use certain accessories or peripheral devices. Every time the computer boots, it reads this file to find out about such things as disk drives, peripheral devices, and memory allocation.

Controller A controller is a circuit board that controls a computer accessory such as a disk drive or tape drive. The difference between an adapter and a controller is that a controller generally has more built-in intelligence, and can perform independent functions while the processing unit of the computer is performing other operations.

Device Driver A device driver is a special program that tells the computer how to use a certain accessory or peripheral device. In order to be loaded, a device driver's name must be listed in the computers Configuration file, CONFIG.SYS.

Diskette Drive A diskette drive is the storage device inside your computer (or attached externally) that reads and writes diskettes.

DOS DOS stands for Disk Operating System. This is the standard IBM PC operating system. The version from IBM is called PC-DOS while the equivalent version from Microsoft is called MS-DOS.

Drive Activity Indicator The drive activity indicator is the light on the front of a diskette drive that indicates that the drive is in use. Never attempt to eject the diskette while the drive activity indicator is lit. This could cause the loss of valuable data from the diskette.

D-Shell Connector A D-shell connector is a type of cable connector that has two or three rows of contacts enclosed in a trapezoidal metal shroud. The trapezoidal shape of the shroud is

what gives this connector its name. D-Shell connectors are used on all externally mounded SYSGEN Bridge-File products and their interface cables. Because of their shape, D-shell connectors cannot be improperly attached to another connector.

Edge Connector- See Card Edge Connector

Electrostatic Discharge (ESD) The small blue sparks you see when you walk across a carpeted room and touch a grounded point such as a light switch are a form of ESD. These sparks are caused by static electricity, and can impart a shock of up to 15,000 volts. Components on a printed circuit board can generally take no more than five volts. ESD can damage or destroy these devices. Always ground yourself before handling any printed circuit board by wearing a wrist strap or touching a grounded point such as a computer chassis

Electromagnetic Interference (EMI) The term EMI refers to radio waves which disrupt electronic equipment. Particularly strong EMI can cause computer malfunctions or data processing errors. The most common sources of EMI are radar and radio transmission equipment. Certain types of computer monitors can also cause EMI.

Expansion Slot An expansion slot is an internal connector situated on a computer's motherboard (the large board mounted on the base of the computer cabinet) or sometimes oriented vertically inside the chassis. Accessory boards and optional controllers for a variety of products can be plugged directly into the expansion slot to increase the capabilities of the computer.

Fixed Disk Drive A fixed disk drive, sometimes called a hard disk drive, is a data storage device using magnetically coated metal disks to store large amounts of data. The magnetic disks are permanently mounted inside the drive.

Grounding Pad A grounding pad is an anti-static floor or table mat that conducts static electricity away from electronic components to prevent damage by electrostatic discharges.

Header Connector A header connector is a row of gold-plated pins soldered to the component side of a circuit board. These can mate to a socket connector on a cable or on another circuit board. They can also mate to jumper blocks, which can connect one of the gold pins to another.

I/O Address An I/O address is a number assigned to an adapter or controller allowing the computer to send specific instructions to these devices. Each controller or adapter in a computer must have a unique I/O address. If two adapters or controllers have the same I/O address, the resulting conflict can cause the computer to halt. The I/O Address of the SYSGEN Omni-Bridge can be set to either 3F0 - 3F7(hexadecimal) or 370-377. If the Omni-Bridge's I/O address conflicts with another controller or adapter in your computer, you must change the I/O address of the Omni-Bridge or of the other board, or leave one of them out of your computer.

I/O Cable An I/O (input/output) cable is a cable used to route data between devices attached to a computer. For the SYSGEN Bridge-File line of products, external drives are connected to the Omni-Bridge or other Bridge-File adapter with a 37-pin I/O cable. For most internal diskette drives and controllers, the I/O cable is a 34-pin ribbon cable.

Interface Cable - See I/O Cable

Jumper Block A jumper block is a small block of plastic with a metal insert, that is used to connect two gold-plated pins on a circuit board together. Jumper blocks are used to make connections on a circuit board to set the board for certain applications.

Megabyte A Megabyte is a unit of measurement nominally accepted to be a million bytes. The actual number of bytes per megabyte is 1,048,576.

Microchannel Bus The Microchannel Bus refers to the I/O bus architecture used in the IBM PS/2 Model 50, 60, 70, and 80 computers. Options and adapter boards designed for the microchannel bus cannot be used in PC-Bus computers, including the IBM PC, XT, AT, and PS/2 Model 25 and 30 computers.

PC Bus The PC-Bus refers to the I/O bus architecture used in IBM PC, XT, AT, and compatible computers. The PC Bus is also used in the PS/2 Model 25 and 30 computers, but not in the PS/2 Model 50, 60, 70, or 80 computers. Options and adapter boards designed for the PC-Bus cannot be used in Microchannel Bus computers

Read/Write Head The read/write head is the device within a diskette drive that reads and writes data to the diskette's magnetic

media. Physically, it is a small, slippery electromagnet mounted so that it is in contact with diskette's media. Since the read/write head is in contact with the diskette's media, it should be cleaned periodically to prevent damage to the diskette and to ensure proper performance of the diskette drive.

Socket Connector A socket connector is a type of cable connector that mates to a row of pins soldered to a circuit board.

Terminator A Terminator is a special resistor pack used to reduce noise in I/O cables. Terminators must be properly arranged in all 5.25-inch diskette drives.

Voltage Spiking Voltage spiking consists of surges in the voltage of an AC power line. This may be caused by certain types of equipment plugged into the AC circuit. All of your computer equipment should be plugged into an AC power circuit that is free of voltage spikes. A power filter or isolation transformer can sometimes filter out the worst of the spikes.

Working Copy A working copy is a duplicate of an important software diskette such as your original DOS Diskette. The original DOS Diskette should always be stored in a safe place and used only to make more working copies.

Software License and Product Warranty

Software License Agreement

Read the following terms and conditions carefully before opening the diskette package. Opening the diskette package indicates your acceptance of these terms and conditions. If you do not agree with them, you should promptly return the unopened package to your dealer. SYSGEN, Inc. provides this program and licenses its use. You assume responsibility for the selection of the program to achieve your intended results, and for the installation, use and results obtained from the program.

License

You may:

a) use the program on a single machine;

b) copy the program into any machine readable or printed form for backup or modification purposes in support of your use of the program on a single machine;

c) Merge the program with another program for your use on the single machine. (Any portion of this program merged into another program will continue to be subject to the terms and conditions of the Agreement.) You must reproduce and include the copyright notice on any copy, modification or portion merged into another program. You may not use, copy, modify, or transfer the program, or any copy, modification, or merged portion, in whole or in part, except as expressly provided for in this license. If you transfer possession of any copy, modification, or merged portion of the program to another party, your license is automatically terminated.

Term

The license is effective until terminated. You may terminate it at any other time by destroying the program together with all copies, modifications and merged portions in any form. It will also terminate upon conditions set forth elsewhere in this Agreement or if you fail to comply with any term or condition this Agreement. You agree upon such termination to destroy the program together with all copies, modifications and merged portions in any form.

Limited Warranty for Equipment

SYSGEN, Inc. warrants that its standard hardware products sold hereunder will be free from defects in workmanship or material under normal use and service. SYSGEN's obligation under this warranty shall not arise until the end user of the Products ("Buyer") returns, via a SYSGEN dealer, the defective product to SYSGEN's plant at 556 Gibraltar Drive, Milpitas, California, 95035 U.S.A. The Buyer shall pay shipping costs of said defective products to SYSGEN, Inc. SYSGEN's only responsibilities under this warranty are at its option to repair or replace, without charge, any defective component part of such Products. The effective period of this warranty is 1 (one) year for parts and labor, from date of purchase.

This warranty is contingent upon proper use of the Product. This warranty will not apply if adjustment, repair or parts replacement is required because of accident, unusual physical, electrical or electromechanical stress, neglect, misuse, failure of electric power, air conditioning, humidity control, transportation, operation with media not meeting or not maintained in accordance with SYSGEN, Inc. specifications or altered.

Except for the express warranties stated herein, SYSGEN Inc. disclaims all warranties on products furnished hereunder, including without limitation, all implied warranties of merchantability and fitness; and the stated express warranties are in lieu of all obligations or liabilities on the part of SYSGEN, Inc. arising out of or in connection with the performance of the Products.

Licensed Programs or Other Software

All licensed programs or other software are distributed or sold on an "as-is" basis. The entire risk as to the quality and performance of the goods is with the buyer. Should the goods prove defective following their purchase, the buyer, and not the manufacturer, assumes the entire cost of all necessary servicing or repair.

556 Gibraltar Drive
Milpitas, California 95035

SYSGEN